

## **ABSTRACT**

**BACKGROUND:** Reviewing the dental and maxillofacial structures in all perspectives may reveal hidden aspects of relevant disease and may enhance diagnosis. Multiplanar imaging has offered an unparalleled diagnostic approach when dealing with an unknown entity (pathological or not) that has stood as a diagnostic challenge like odontogenic cysts and tumors. Once a volume of data has been acquired and stored by CBCT, this data can be reformatted or realigned in any way the diagnostician requires. This allows the area of interest to be viewed clearly without any superimposition with other neighbouring structures and hence helps in its assessment from all perspectives.

**AIM:** The aim of the study is to evaluate Cone Beam Computed Tomography in pre-operative analysis of odontogenic cysts and tumours of the maxillofacial region.

**OBJECTIVES:** 1. To interpret the pre- operative CBCT axial, coronal, sagittal and 3 dimensional images of various odontogenic cysts and tumors of the maxillofacial region (histopathologically proven) in relation to the morphological characteristics

2. To correlate the CBCT imaging features with histopathological findings

3. Formulate the diagnostic algorithm based on the imaging features

**MATERIAL AND METHOD:** Totally 24 cases were included under the study out of which 6 were female and 18 were male. The cases were selected from the Department of Oral Medicine and Radiology, Tamil Nadu Government Dental College and Hospital, Chennai – 600 003 between June 2014 and November 2014. All were in the age group of 5 – 60 years. Patients reporting with complaints of swelling of the jaws with/ without associated pain were subjected to a thorough clinical examination. After arriving at a provisional diagnosis of either an odontogenic cyst or odontogenic tumour CBCT scan was taken and the image data was analysed in all 3 planes and 3-D reconstructed views. Cross sectional CBCT images were evaluated for maximum dimension of the lesion on the axial section images in the mesio- distal and buccolingual direction, ratio of the two measurements, evidence of expansion and perforation of cortical plates, evidence of displacement and resorption of adjacent teeth, presence/ absence of impacted teeth, locularity of the lesion, internal density

and involvement/ displacement of adjacent vital structures like inferior alveolar nerve canal, mental foramen, maxillary sinus, floor of nasal cavity and nasopalatine foramen.

**RESULTS:** In the present study, CBCT showed no statistically significant difference in assessment of these odontogenic lesions in terms of bucco- lingual dimensions, expansion and perforation of cortical plates, displacement and resorption of adjacent teeth, locularity and internal density of the lesion, and in terms of involvement of the maxillary sinus, nasal fossa and mental foramen ( $p < 0.005$ ). However there was an overall higher accuracy (statistically significant,  $p < 0.005$ ) for CBCT for the diagnosis based on site, measurement of mesio- distal dimension, ratio of A: B, presence of impacted tooth and in cases of involvement of the nasopalatine foramen and mandibular canal.

**CONCLUSION:** CBCT allowed a careful assessment of the relationship between the large lesions and close vital structures such as maxillary sinus, nasal cavity, and mandibular neurovascular bundle. CBCT is a reliable tool for pre- operative radiological assessment of odontogenic cyst and tumors.

**KEYWORDS:** Odontogenic cyst, Odontogenic tumour, CBCT, Dentigerous cyst, Periapical Cyst, KCOT, Ameloblastoma